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The reliability of macro-economic forecasts

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The Reliability of Macro-
Economic Forecasts

by Dean Spinanger and Norbert Walter

Institut für Weltwirtschaft an der Universität Kiel

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Mit den Kieler Arbeitspapieren werden Manuskripte, die aus der Arbeit des Instituts für Weltwirtschaft hervorgegangen sind, von den Verfassern möglichen Interessenten in einer vorläufigen Fassung zugänglich gemacht. Für Inhalt und Verteilung sind die Autoren verantwortlich. Es wird gebeten, sich mit Anregung und Kritik an sie zu wenden und etwaige Zitate aus ihrer Arbeit vorher mit ihnen abzustimmen.

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"Forecasting is simply good analysis"
V.L. Bassie, Economic Forecasting,
New York 1958, preface

I. Recent Experiences

In Germany since early 1981 a consensus has emerged predicting that an economic recovery is due for the second half of the year. This forecast of an upturn was put forth for 1981 and for 1982. Despite these consensus, the forecasts proved to be wrong. Nonetheless in autumn 1982 the consensus forecast for 1983 again explicitly included a recovery starting mid-year, and again the forecast seems to be proving to be wrong. This time, however, the failure is not forecasting a recovery, only to find out its not there, but rather miscalculating in the other direction as the economic recovery has already been on the move since the beginning of 1983.

Another startling example of failures of macro-economic forecasts is that of the United States in recent years. Almost uninterruptedly the forecasts have proved to perform poorly. In late 1979 the forecast recession did not materialize, then the massive GNP drop in 1980 came to everybody's surprise, as did the mild recovery in late 1980 and the Reagan euphoria in early 1981. The sobering weak performance of the economy thereafter, entering the second part of the recession, did not help forecasters to avoid the disastrous forecasting errors for 1982, when the end of the recession was unanimously seen as starting by mid-1982 at the latest.

These observations make model builders and other forecasting experts believe that major economic relationships and reaction parameters suffered a structural break at the

beginning of the eighties. Models based on the historical experience of postwar-cycles would thus no longer be capable of capturing events. One important feature of most econometric models is the impact of fiscal policy. It seems as if first of all the behavior of fiscal policy authorities has changed - the tendency now is more to reduce the government budget deficit than to behave anti-cyclically. Secondly, that economic agents react differently to fiscal actions. The most striking case in point is the failure of the US-tax cut in mid-1982 to ignite a private spending recovery.

But not only these modifications made forecasting more difficult. Financial innovations in many countries, in the UK and the US in particular, made the analysis of monetary policy much more difficult.

On top of these factors come uncertainties due to the international liquidity crisis and the problems of changing governments, especially in Germany in early autumn 1982.

II. What Are Macro-economic Forecasts All about ?

1. The Forecast Variables

In the general discussion macro-economic forecasting is often identified as giving real GNP numbers for the next half of a business cycle. In continental Europe it is even more limited, since forecasts are hardly made for more than a year and a half.

These year-over-year figures for real GNP for the current or the next year are what the average citizen thinks macro-economic forecasting is all about.

This judgement, however, is a massive understatement. Instead, macroeconomic forecasting consists of variables in absolute or money terms (labor input - persons or hours -, number of unemployed, short time-workers, expenditure categories like consumption, investment, inventories, exports and imports) and of prices (deflators for various GNP components, the consumer price index, import- and export prices, including exchange rates - within the EMS, against floating currencies, measured as effective exchange rates - wages and interest rates).

Additionally, nominal categories of many mentioned variables are calculated; figures on the current account balance, the government budget and monetary expansion complement the list of forecast variables. While productivity figures and income distribution can be derived from the above mentioned forecast variables, numbers for the potential growth rate and the labor force are "autonomous" inputs for a series of behavioral equations.

2. The Time Horizon of Forecasts

Macro-economic forecasting has a wide spectrum of time horizons. At the very short end experts in the U.S. try to forecast next week's money supply figures. More common are attempts to guess next month's data for industrial production, the inflow of new orders, the inflation rate or the current account. Mostly, however, one would identify macroeconomic forecasting as the attempt to get hold of a view for the coming quarters, the next year or at a maximum the next cyclical turning point. The standard procedure in the U.S. is a forecast period of some 10 quarters ahead. In continental Europe the standard is to forecast for the current or - at the most - for the coming year (in year-over-year numbers). While those exercises concentrate on the analysis of demand-side influences,

whether Keynesian-type or monetarist, a supply side view - as a rule - leads to a more long run analysis of 5 to 15 years. Then the efforts shift to the analysis of demographic and labor force trends, technology and the (changing) pattern of economic policy reaction functions.

3. Methodology behind Macroeconomic Forecasting

There is no standard body of methodology used in macroeconomic forecasting. The techniques differ over time, by education, by character, technical equipment and taste. While Germans as a rule prefer the informal, more descriptive approach, the Scandinavians, Dutch, Belgians, French and Anglosaxons, including the Japanese, prefer a more formal, often more quantitative approach. This is not only reflection of a German-Swiss antipathy against planning and measuring the economy and steering it by means of economic policy, but also is due to a lack of mathematical education, a lack of an efficient information system (impact of the inflexible state telecommunication monopoly in this field and its implications for the cost of information plus the speed of implementation of new techniques). Both factors have had an impact on the type of macroeconomic courses in German universities.

The question as to which approach is most suitable for macro-economic forecasting is actually an incorrectly posed question. It is obvious from theoretical as well as empirical considerations that there is not a single (methodological) answer to the wide spectrum of questions put before the macro-economic forecaster.

The length of the time horizon of a forecast is as crucial a factor for the choice of a certain approach as is the type of the variable, which should be forecast.

Whether single equations, partial models of a sector or a market, or fully developed interlinked national or even international models should be chosen, is a matter of theoretical and empirical concern. It is doubtful whether a fully internationally linked model, including trade, capital, labor and information links, is theoretically superior, if - as is the case - you have to box it in the existing (partly misleading) statistics.

From a more practical standpoint, enhanced by some empirical work with those more or less fully endogenized models, a less ambitious approach often seems to be more efficient.

The very fact, that in recent years the importance of the lagged endogenous variable as an "explanatory" variable increased in almost all models is a hint towards the forecasting power of autoregressive processes, especially for short-run-forecasts.

In many cases, short-run forecasts for a series of variables is very effectively possible by engaging in unilateral autoregressive processes. In many cases and for many countries such approaches have produced remarkably good results. If it is true that there has been a structural shift in most economies in recent years, then one reason for the good performance of autoregressive estimates is obvious: such equations are less burdened with outdated structures and by definition adjust to changing times. But it should be added - the evidence in favor of autoregressive procedures is not always overwhelming, particularly as the selection of the weighting and smoothing process is quite time-consuming.

Forecasting with a single equation regression model might seem here to be a real alternative, that is, particularly where theoretical underpinnings are straight forward and

past experience seems promising, do such methods offer a relatively quick and easy solution. A case in point here is a simple equation used at the Kiel Institute since 1976 to supplement traditional forecasting techniques.¹ The equation - estimated with yearly data - forecasts changes in real domestic expenditures in Germany using changes in monetary balances (M_1) and prices (the deflator for domestic expenditures) as explanatory variables.

For short-term forecasting it is important that the explanatory variables are known with certainty or can be easily predicted. Because the effects of government activity are difficult to predict we use a rather general formulation where changes in economic activity (ΔY) are solely explained by current and lagged changes of monetary balances (ΔM) and prices (ΔP).

Normally changes in real gross national product are used as an output measure, but in an open economy, with a large foreign sector, changes in real domestic expenditures (real gross national product minus real exports plus real imports) are more appropriate to measure the output effects of changes in monetary balances. Corresponding to the definition of the selected output variable, changes in the deflator of domestic expenditures are used as the price variable. The incorporation of changes in prices (ΔP) as an exogenous variable is surprising. However, in the Federal Republic of Germany price increases in the short-run cannot be explained only by changes in monetary balances. Instead the price performance is strongly influenced by changes in the terms of trade, mainly stemming from changes in the exchange rates. As far as the choice of the appropriate monetary aggregate is concerned, changes in the narrow monetary aggregate M_1 (currency in

¹ See Langfeldt, Enno, "Experiences in forecasting short-term economic activity in the Federal Republic of Germany with a single-equation model." Kiel, mimeo, 1982.

circulation plus demand deposits) shows the closest relationship to changes in real domestic expenditures.

The changes of the variables in the equation have been expressed as first differences of their logarithmic values. Using ordinary least squares, a regression with yearly data for the period 1957 to 1980 yielded the following results (t-statistics in brackets)

$$\begin{aligned} \Delta Y = & 0.033 + 0.470\Delta M_t + 0.311\Delta M_{t-1} - 0.275\Delta M_{t-2} \\ & (2.10) \quad (4.40) \quad (2.68) \quad (2.56) \\ & + 0.923\Delta P_t - 1.831\Delta P_{t-1} + 0.029\Delta P_{t-2} \\ & (3.80) \quad (5.33) \quad (0.11) \end{aligned}$$

$$\bar{R}^2 = 0.8034 \quad F = 16.66 \quad DW = 1.83 \quad SEE = 0.0127$$

A useful test for a forecasting model is to consider its forecasting ability relative to other forecasts. Therefore we will now compare the predictions on the basis of the described single equation regression model to the forecasts done "intuitively" by the Kiel Institute and by the association of the five leading economic institutes. We compare forecasts for the change in real domestic expenditures made in autumn for the following year.

The forecast errors of the different models are shown in Table 1. The forecasts of the Kiel Institute and the joint forecast of the five Institutes show up approximately the same predictions errors. This is not too surprising, for the Kiel Institute takes part in the joint forecast. Compared to the "intuitive" forecast of the Kiel Institute and the joint forecast of the five institutes the predictive ability of the single-equation-regression model is relatively better.

The 'traditional' short-term cyclical forecasts are to a large extent trend-oriented. They understate the cyclical

Table 1 Forecast errors of different models 1975-1980

year to be forecasted	change of real domestic expenditure over previous year - actual outcome	one year ahead forecast error ^a		
		Kiel Institute "intuitive" forecast	joint forecast of the five German Institutes	ex-ante forecast equ.
1975	+0.8	+2.8	+2.0	-1.8
1976	+5.0	-1.1	-1.2	+1.1
1977	+2.9	+2.7	+2.3	+1.4
1978	+3.9	-0.1	-1.0	-0.3
1979	+6.1	-1.8	-2.1	+0.4
1980	+1.8	+0.1	+0.4	-1.5
mean prediction error ^b		+0.43	+0.07	-0.11
mean absolute prediction error ^c		1.43	1.50	1.08
root-mean-square prediction error ^d		1.81	1.65	1.22
<p>^a+(-) indicates on overprediction (underprediction)</p> <p>^bCalculated as $\frac{1}{T} \sum_{t=1}^T (\Delta Y_{\text{pred}} - \Delta Y_{\text{act}})$.</p> <p>^cCalculated as $\frac{1}{T} \sum_{t=1}^T \Delta Y_{\text{pred}} - \Delta Y_{\text{act}}$.</p> <p>^dCalculated as $\sqrt{\frac{1}{T} \sum_{t=1}^T (\Delta Y_{\text{pred}} - \Delta Y_{\text{act}})^2}$</p>				

Sources: Association of the German Economic Research Institutes, Die Lage der Weltwirtschaft und der Deutschen Wirtschaft, Kiel Institute of World Economics, Die Weltwirtschaft; own calculations

dynamics and stick to the growth rate of potential output. Therefore in a recession (1975) larger overpredictions occur, while in a boom (1979) economic activity is under-predicted. The regression model seems to predict the cyclical behavior of the economy more accurately. Therefore it seems to be rather helpful especially in forecasting cyclical turning points.

Since every econometric forecast includes not only lagged exogenous variables, the process of forecasting the explanatory variables for the current period introduces additional potential errors which can ruin the predictive performance of the regression model. This is no doubt caused by the offsetting prediction errors between ΔM and ΔP - due to the implicitly captured policy reaction function - being inherent to the equation.

In moving beyond such simple but not ineffective methods into the world of multi-equation models the problems encountered should by no means be underestimated, particularly in light of the fact that the more time and effort required for the more sophisticated models does not mean more reliable results. As a matter of fact in an investigation of 5 large econometric models in the U.S.A. - ranging in size from 81 to 831 equations - there was even a negative correlation between size and performance based on key variables. In light of such findings the obvious question must be answered as to why larger models are built if they don't offer us more. First of all they allow a better specification of relevant variables. Second, by including the relevant variables, correlations between residuals can be reduced. Third, by accounting for a large number of explanatory variables error variances can be reduced. Despite these advantages tests have shown that a simple autoregressive rabbit - just hopping along - can

beat the biggest and most sophisticated models (Cooper, 1972). Such an attack is and was taken seriously (Howrey, Klein and McCarthy, 1974) and rebuttals brought forth the ingredients necessary to make the large models produce sensible results. They are

- a - specification
- b - sample selection
- c - estimation
- d - application, including prediction, simulation and analysis.

But overriding and permeating all four of these points is something called "tender loving care" - TLC for short. What TLC means is simply that although theoretical knowledge dictates the basic structure of the models, reaction parameters and hence lag structures - be they negative or positive - are subjected to a great deal of intuition plus trial and error. Thus models once set up are not finished products - they must continually be given TLC and corrected when the results begin to go astray.

In many cases built-in controls exist to keep models from producing totally nonsensical results when they are run over longer periods of time. For instance take the case of the IBM model in the early 70's. Here a "ceiling" was inserted which kept the U.S. unemployment rate from going too high - i.e. an operation stated if the (forecasted) unemployment rate is greater than 7.5 %, the unemployment rate equals 7.5 %. Obviously the higher unemployment rates in the U.S.A. in the mid 70's and later on meant that the model was given a good deal of tender loving care.

In many cases, however, it's not the lack of TLC which causes models to produce incorrect or unreliable results, but rather the failure to include essential variables in a

manner congruent with their importance. It is not necessary to delve into the differences between Keynesian and monetarist philosophies to elaborate on this aspect, the foreign sector offers a prime example. That is, most models are specifically designed for a certain country with demand from abroad, exchange rates and capital flows entering the picture in an exogenous and predetermined fashion. The interdependent world we live in is thus inadequately taken into consideration, despite the enlargement of the EEC and despite the multilateral tariff reductions carried out over the last 25 years. This is not to say, however, that progress hasn't been made in incorporating foreign developments in a more explicit fashion, as large-scale linked models have been developed and put to use in recent years. But these models - even if each sub-model within a given world model was created with the same theoretical underpinnings in mind - are plagued by the same problems playing simple models: forecasting exchange rate changes. While the consequences of this weakness obviously cannot be overlooked in those countries heavily dependent on foreign trade, not even in the United States can the foreign sector be subjected to passing thoughts only: Although foreign trade accounts for only about one sixth of GNP, about one third of corporate profits have come from abroad in recent years.

Whatever type of model is consulted or depended upon the user must be sure that the demands he places on the results are part and parcel of the model-builders' intentions. That is, all models and forecasts are designed to fulfill certain purposes, and to overinterpret the results means stepping into no-man's-land. The joint forecast of the major economic research institutes in Germany issued just over two weeks ago is an example of a set of numbers which indeed sounds impressive. But since the forecasts are basically a compromise, their wording is usually cast

in terms which can only be completely understood by those who participated in preparing them. While an indication about the degree of disagreement can be gained from the extent to which dissensions exist, more reliability could be gained by comparing the spread of the forecast from the individual institutes themselves. In the cases where the path is clear to all concerned, the spread will be small. If, however, uncertainty abounds the spread will be wide and the caution light should be blinking for those studying the forecasts.

II. Forecasting Institutions, their Approaches and Results

The question thus arises about where business forecasts are available, what they offer and how good they are. Let's start first of all with the country we are now in - Germany. Aside from the above-mentioned joint forecast, each of the five major economic research institutes produces analyses and forecasts of various depths. The institute from which I come - the Kiel Institute of World Economics - makes four in-depth analyses and forecasts a year for Germany and the World - that is the major industrialized countries - and a once-a-year in-depth analysis of certain industrialized countries. While the basic method applied in forecasting is intuitive, this does not preclude using empirical techniques - as mentioned above. The Institute has even set up a large econometric model¹, the estimates of which do not always agree with those reached by the more mundane methods - at least not before receiving a good portion of TLC.

¹ For a recent description of the model see Tewes, Torsten, "Ökonometrische Prognose der Konjunkturlaufentwicklung in der Bundesrepublik Deutschland bei unterschiedlichen Annahmen über Zinselastizitäten und autonome Investitionen - Eine Analyse mit Hilfe des Vierteljahresmodells des Instituts für Weltwirtschaft." Die Weltwirtschaft (Tübingen), 1980, No. 1, pp. 41-59.

The procedures in the other institutes are similar. Differences between the institutes stem less from procedures used than from the basic philosophies and thus the resulting differing interpretation of the same economic phenomena. The work being done at Kiel is heavily influenced by the monetarist thinkings - but we do not consider ourselves to be money freaks. The general policy conclusions and suggestions coming from the Kiel fjord are also imprinted by the belief that it's not the economy which needs to be helped and propped up, but rather the economy needs to be freed from the burdens placed upon it so it can once again function efficiently.

Other institutes reflect more the Keynesian philosophy, while still others place a good deal of faith in sounding out the feelings of businessmen. Also independent - like the institutes themselves - is the German Council of (Economic) Experts, set up in 1963 to provide a thorough analysis of the economy once a year. Complementing these organizations are analyses and forecasts from economic institutes representing unions and employers, as well as government or official institutions (like the Ministry of Economics or the Bundesbank).

For sure the many forecasts cover a broad spectrum of philosophies and pressure groups. But more important to the users of forecasts is their accuracy and reliability. As the Nobel Prize recipient Milton Friedman argued, the only valid test of whether one's approach is correct or not is whether the predictions are better or worse than predictions coming from other sources. Table 2 contains a brief listing of forecasting institutions and their accuracy in predicting overall real GNP since 1976. It might be interesting to note that Kiel has been accused of bad

Table 2 - Growth of Real GNP (%) and Forecast Errors from Selected Institutions in Germany 1976-1982

Year	GNP Growth ^b	Forecast Errors ^a			
		Kiel Institute ^c	Joint Forecast ^d	Council of Experts ^e	Government ^f
1976	5.6	-1,6	-1.6	-1.1	-1.1
1977	2.4	+3.3	+3.1	+2.1	+2.6
1978	3.4	+0.1	-0.4	+0.1	+0.1
1979	4.4	+0.1	-0.4	-0.6	-0.4
1980	1.8	-0.3	+0.7	+1.0	+0.7
1981	-0.3	-0.6	+0.3	+0.8	-0.2
1982	-1.1	0.0	+2.1	+1.6	+2.4

^a + = overestimate; - = underestimate; in percentage points.
^b Initial estimates
^c September of previous year
^d October of previous year
^e November of previous year
^f January of same year

Source: Own calculations based on statistics from respective institutions.

mouthed the economy in recent years and even causing the recession to become worse. A more relevant question should perhaps be asked in return: are those agencies which always foresee a silver lining actually believed or do they merely cause the public to become more sceptical?

In the United States, where forecasts are produced with a speed only possible when a telecommunications system practically allows the newest statistics and revisions to be fed directly from the source to the user's computer, monthly updates of even the largest models are released. Publicly financed institutions - like the institutes in Germany - take a back seat to private organizations in the U.S. and are primarily restricted to the federal government (e.g. the Economic Report of the President) and the Federal Reserve System. The private forecasters - like Wharton, Data Resources and Chase - offer their services with the same degree of frankness that other services are offered, and thus monthly updates are nothing more than the result of the TLC they give their models. Basically speaking the philosophy of Michael Evans (formerly of Chase Econometrics) well represents the attitude necessary to market the models: "Often wrong but never in doubt".

The approach taken by the various institutions differs but little. The models are basically Keynesian, although in recent years more attention has been paid to incorporating promising features from the neoclassical school. But even in light of improvements made and an increase in model size - the Wharton model (with more than 1600 equations) has more than doubled in size over the last 10 years - major stumbling blocks are still there. One such area is guessing the future policy stances - here there was general agreement when forecasts were being made for 1982 that the Fed would be loosening its hold on the expansion of the money supply. It did, but far later than expected

and thus the strong upturn predicted for the second half of 1982 did not come about. Another area where the models do not seem to perform up to par is in capturing the impact of inflationary expectations on consumers' behavior. This - with other problems - led to too high forecasts of the impact of last July's 10 % tax cut.

The performance in general (see Table 3) would seem to have improved in recent years. Not only are the first quarter estimates better, but in particular the estimates for longer periods of time reveal even smaller errors. Whether the performance really did improve is an unanswered question as the "shocks" in the earlier period might well have been greater. Also interesting - but not surprising - is that the consensus estimate is generally better than the models. But here we also have a case where the object being examined is already influenced by the object with which it is to be compared: those in the consensus group also rely on the forecasts from the models.

Unfortunately time does not allow other countries like the United Kingdom, France, Italy or Japan to be examined with the same detail, as different and interesting constellations are revealed. In France, for instance, there is a large tendency to rely on the government's forecasts, come hell or high water. In the United Kingdom, the birthplace of so many well-known economists, forecasters were continually confronted with unforeseeable shocks - at least until Maggie came along - that most forecasts were deflated with an x-factor to cover unknown but probable problems.

Table 3 - Major Forecasters in the U S A : Approach and Performance

	Approach ^a		Average absolute errors - growth rates ^b					
			1970 III - 1975 II			1976 I - 1980 III		
	Model	Judgement	1 Qtr. ^c	4 Qtrs. ^c	6 Qtrs. ^c	1 Qtr. ^c	4 Qtrs. ^c	6 Qtrs. ^c
A S A / N B E R ^d	Consensus ^e		2.1	2.5	-	2.8	0.8	-
B E A ^f	65%	25%	2.4	2.9	-	3.3	0.5	0.5
C h a s e ^g	70%	20%	2.0	2.4	2.6	3.3	1.4	1.2
D R I ^h	55%	30%	2.6	2.7	2.4	3.1	0.8	0.7
Wharton ⁱ	60%	30%	2.2	2.1	2.4	3.2	0.7	0.8

^a Does not add to 100% due to other factors; based on 1981 information. - ^b Calculated by subtracting from the predicted % change (annual rate) in given period (using provisional data for base period) the actual % change (using revised data). - ^c Time horizon of forecast. - ^d American Statistical Association/ National Bureau of Economic Research survey of regular forecasts. - ^e Most participants rely on informal model and incorporate results of other models into forecasts. - ^f Bureau of Economic Analysis, U.S. Department of Commerce. - ^g Chase Econometrics Associates. - ^h Data Resources Incorporated. - ⁱ Wharton Economic Forecasts Associates, Incorporated.

Source: Adapted from McNees (1975 and 1981).

Of course there are also any number of forecasts from international organizations like the OECD, GATT, ECE, IMF, the EEC and large banks. Even the CIA produces detailed short-term forecasts for most countries, the quality of which is contended to be quite good. Perhaps these forecasts made from the outside - where the overview might be better - are actually better than those made on the inside - this would not be surprising in light of the facilities available at such institutions both in terms of information on other countries, and equipment. A comparison of official forecasts for six countries with those of the OECD has been made. As it turns out (see Table 4) the OECD does not perform better on the average, but in those cases where it does, it reveals something about the official forecasts in the specific countries.

In France, for instance, the errors of the official forecasts were on average 50 % higher than those of the OECD and in none of the cases was the official forecast lower than the actual, i.e. all were overpredictions. In other words official forecasts in France reflect wishes rather than probabilities! (It might be noted that the source is not the newest, but it still seems to hold true in principle.)

IV. Concluding Remarks

Permeating the entire presentation so far have been the problems associated with predicting policy moves. While often not even politicians know what their next policy steps will be - although for sure a less hectic policy-path would help both forecasters and entrepreneurs-alike - unfortunately the problems encountered do not end there. In particular the data problems caused by inaccurate or

Table 4 - Performance of Official and OECD Forecasts of Real GDP/GNP

C o u n t r y	Aggregate	Selected Years	Mean absolute error		Over-/Underprediction	
			Official	O E C D	Official	O E C D
France ^a	GDP	71,73-77	1.85	1.35	6 / 0	4 / 1
Germany ^b	GNP	69-71,73-77	1.67	2.03	4 / 4	4 / 4
Italy ^c	GDP/GNP	73,74,76,77	2.37	2.84	1 / 3	1 / 3
Japan ^d	GNP	70,71,73,75-77	2.17	1.42	5 / 1	4 / 2
United Kingdom ^e	GDP	68,70-72,74-76	1.20	1.76	3 / 3	5 / 2
United States ^f	GNP	68-71,73-75,77	1.10	1.12	6 / 2	5 / 3

^a Ministry of Economy and Finance.
^b Ministry of Economics.
^c National Institute for Study of Economic Trends.
^d Economic Planning Agency.
^e Chancellor of the Exchequer.
^f Council of Economic Advisers.

Source: Adapted from Fieleke (1979).

incomplete data have surely induced many incorrect forecasts as well as many an ulcer. It's not merely that the last months or so are adjusted for complete returns, entire series are produced to take account of ex post improvements. Furthermore, it is becoming an increasing problem to determine whether the predictions one makes have anything to do with reality. That is, the more the government attempts to regulate and administrate, without ensuring that the populous understands and supports such moves, the more the underground economy grows and grows. However, since the official statistics basically cover the official economy, what meaning do forecasts for the official economy have? A good question - and a question which has yet to be answered. While the inaccuracy of the statistics we must deal with usually remains hidden, every so often prime examples become evident. Such was the case the other day when it was reported that the current account deficit for the world turned out to be negative by almost 100 bill. US\$ last year!! In light of such errors the reliability of the forecasts would seem to be soundly shaken. But estimating international flows has always been a particular problem, even with respect to trade with visibles. The joke that more animals are imported by country x from country y than country y exported to country x - and procreation did not take place - is unfortunately far too often true.

How is all this to be interpreted by users of business cycle forecasts?

- First of all, forecasts have to be viewed with the same grain-of-salt attitude with which they are usually produced - forecasting methods will never be able to match crystal ball techniques.
- Second, the size and complexity of forecasting models says nothing about the goodness of the results.

- Third, the proof of the pudding as to how good a forecast is in the result.
- Fourth, the fact that the results of a given model are good for a given set of variables does not necessarily mean that for another set of variables they are equally good.
- Fifth, while a greater consensus among forecasters about the direction and strength of the economy's growth can be interpreted as meaning a higher probability of the forecasts becoming reality, the crucial policy assumptions should be carefully and continually matched with the actual policy stance as the forecast period progresses.
- Sixth, in evaluating the performance of forecasts particular care should be taken in differentiating between errors caused by wrong predictions of policy parameters, errors caused by inherent weakness and errors caused by a poor data base.

For the forecasters - or those who want to forecast - I might suggest the following "golden rules" (adapted from Giersch, 1981):

1. If you can avoid it, never forecast anything!
2. If you are forced to forecast, then forecast in the vaguest terms possible - at best without numbers.
3. If you are unfortunate enough to have to forecast with numbers, then be vague about the time frame.
4. If, however, you have to forecast with hard numbers and with a time frame, then forecast the past.
5. If you cannot get away with this trick, then make several alternative predictions about the future.
6. Should this not be possible, then be optimistic.
7. If your optimism should prove to be wrong, then contend that it was a target projection.
8. If all this proved to be useless, then just remember that anyone else doing the same job would probably not do any better.

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